

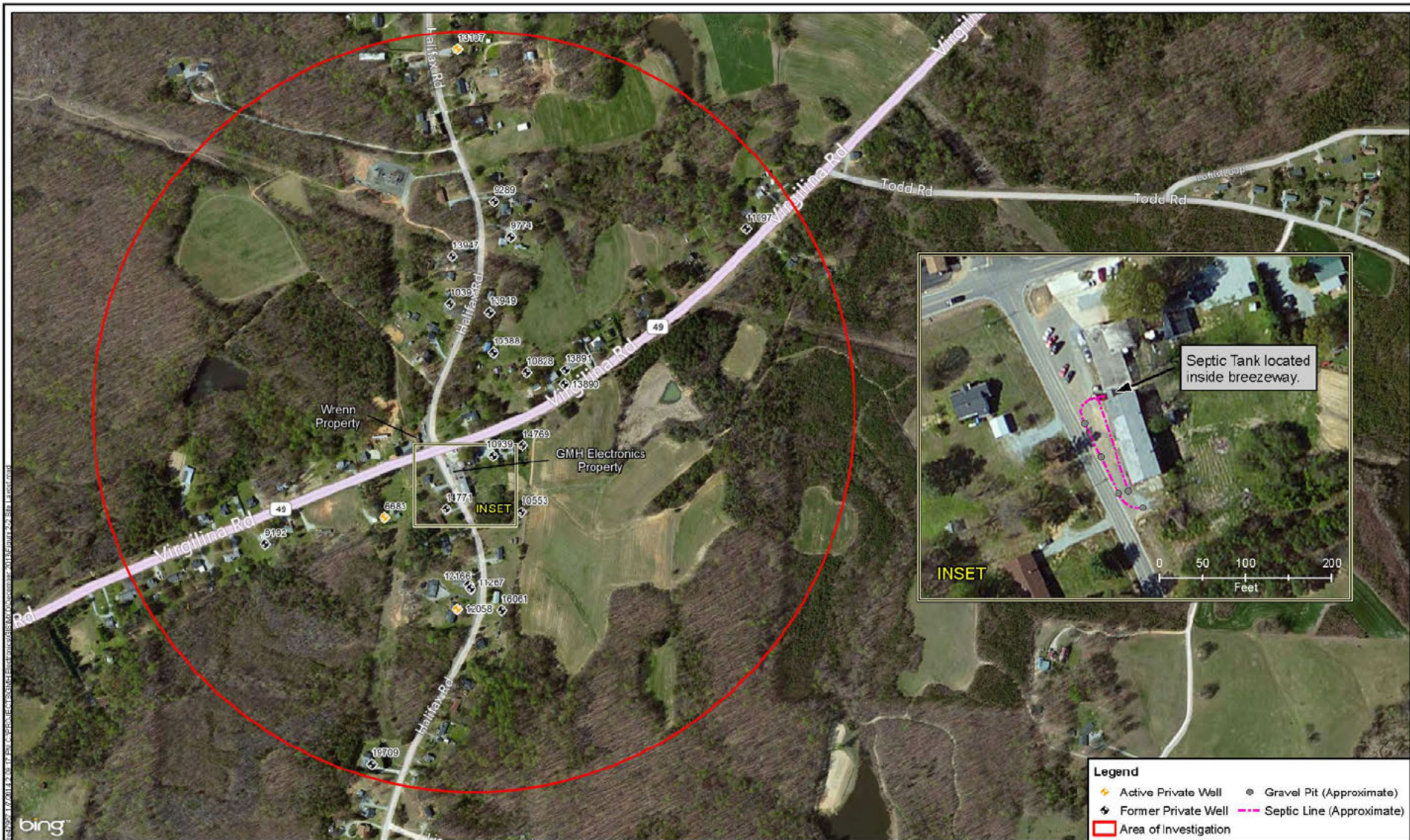
GMH ELECTRONICS SITE

Roxboro, Person County, NC



Priority Panel Presentation





Site Layout
GMH Electronics Superfund Site
Roxboro, Person County, North Carolina



Site Chronology

EPA Removal Action- November 2007

- Following a citizen complaint, NC DENR requested ERRB provide bottled water to more than 17 residences surrounding the site and install carbon filters at 5 homes
- NC UST program installed additional filter systems at 2 homes
- MCL exceedences of 1,1,1-TCA, 1,1-DCE, 1,2-DCA and benzene were detected

Interim RI/ FS- October 2008- January 2009

- 89 private wells were sampled. Of which 17 homes had exceedences of MCLs.

Interim ROD- April 2009

- Showed a threat to Human Health from drinking water contaminated by the site
- All residents and businesses whose private drinking water wells are contaminated by the site and those residents who live approximately 500 feet of the last detected impacted well ("buffer zone residents") were offered a connection to the City of Roxboro municipal water supply

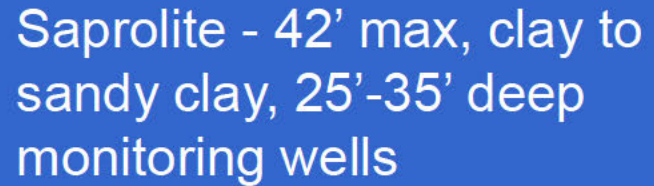
Site Final on the NPL- September 2009

Interim Remedy Completed- October 2010

- Connected 45 homes to public drinking water using ARRA funds

Site-wide RI/FS Completed- July 2014

Interim ROD Signed- September 2014



Transition zone - thin w/ rock fragments

Bedrock - fractured bedrock,
Roxboro metagranite
300+' in private wells

Site Hydrogeology

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- An aerial photograph of a residential area with several blue concentric circles and arrows overlaid, indicating signal coverage or direction. The circles are centered around a cluster of houses. Arrows point from the center towards the edges of the map. Labels include 'Miami Property' with an arrow pointing to a house on the left, and 'GMA Electronics Property' with an arrow pointing to a house on the right. Various PUA (Public Use Area) numbers and coordinates are marked: PUA-9067 N0, PUA-1011 72502, PUA-1349 72839, PUA-107 B 72689, PUA-1114 N0, PUA-1471 72949, PUA-1011 72527, PUA-103 72515, PUA-11267 72232, and PUA-1390 71854. The map shows houses, roads, and trees.



Goals of the Site Wide Remedial Investigation

Performed October 2012-June 2014


-  Determine the nature and extent of site-related contamination in groundwater and soil.
 - Identify source areas
 - Characterize surficial and bedrock hydrogeology
 - Determine the extent of the groundwater plume
- Identify site-related risks

Figure 1: Map of Surficial Aquifer Contamination

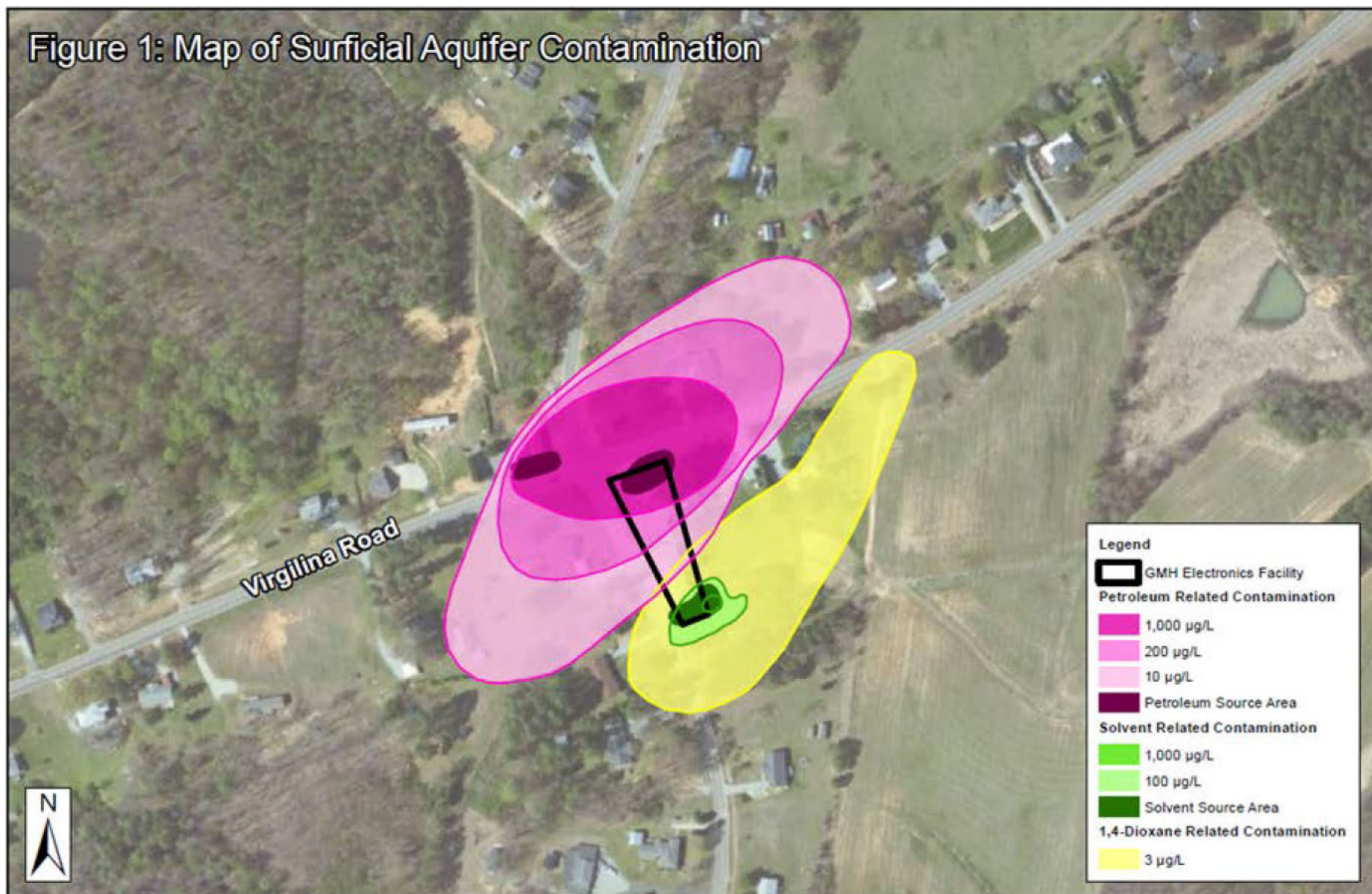
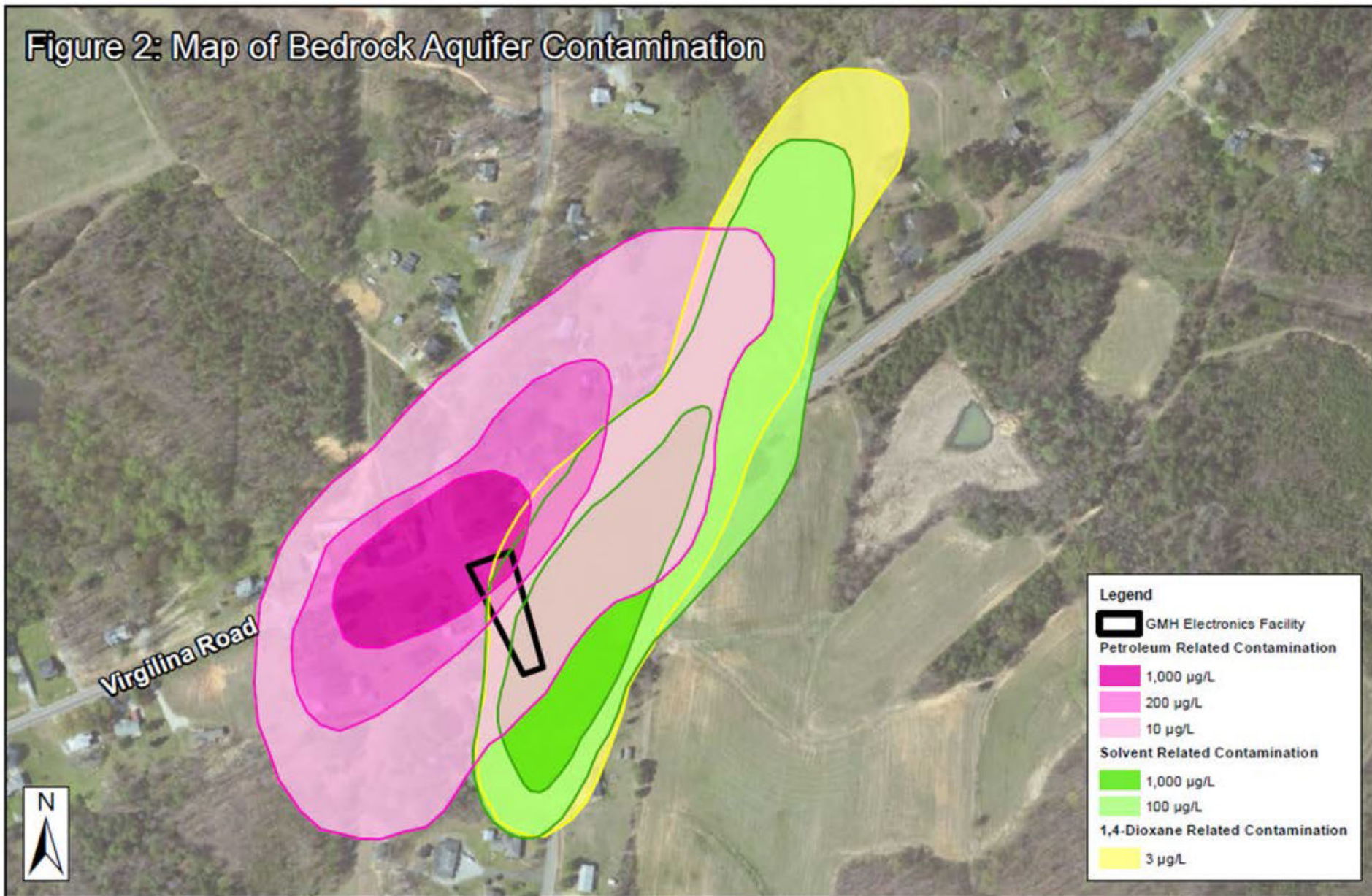


Figure 2: Map of Bedrock Aquifer Contamination





Remedial Investigation Conclusions

- Human Health Risks
 - Risks associated with the site are from:
 - Ingestion of contaminated drinking water
 - Dermal contact with contaminated water when showering/bathing
 - Inhalation of volatile constituents when using contaminated groundwater for household activities (showering, bathing, cooking, etc.)
 - Plume threatens residents and businesses that are outside of the interim Remedial Action coverage area
 - No risks were identified outside of EPA's risk range from exposure of Site soils or inhalation of vapors
- No unacceptable ecological risk was identified related to this site.



September 2014 ROD

- The Selected Remedy outlined in the 2014 ROD is an interim action for groundwater and a final action for soil.
- The selected remedy contains the following components:

Area	Alternative	Description	NPV Costs
Petroleum Source	S2-P	Soil Vapor Extraction (SVE)-unsaturated soils	\$623,522
	S4-P	Multiphase Extraction (MPE)-saturated soils	\$773,000
Solvent Source	S2-S	Soil Vapor Extraction (SVE)-unsaturated soils	\$254,678
	S6-S	In Situ Chemical Reduction (ISCR)-surficial and bedrock aquifer source areas	\$1,168,900
Petroleum/ Solvent GW Plume	S/P5	In Situ Enhanced Bioremediation (ISEB)- surficial and bedrock aquifer outside source areas	\$1,335,200
1,4- Dioxane Plume	D2b	In Situ Chemical Oxidation (ISCO)-surficial and bedrock aquifer	\$640,700
		Total:	\$4,916,100



Soil Cleanup Levels for Protection of Groundwater

Contaminant of Concern	Highest Detected Value	Cleanup Level	Basis for Level
Metals (mg/kg)			
Manganese	1,100	113	Risk Based Value
Petroleum-Related VOCs (µg/kg)			
1,2,4-Trimethylbenzene (TMB)	580,000	137,900	Risk Based Value
1,2-Dibromoethane (EDB)	24	0.2	Risk Based Value
1,3,5-Trimethylbenzene (TMB)	180,000	128,700	Risk Based Value
Benzene	82,000	55	Risk Based Value
Ethylbenzene	210,000	200,400	Risk Based Value
n-Propylbenzene	90,000	31,500	Risk Based Value
Toluene	620,000	14,800	Risk Based Value
Xylenes, total	1,100,000	15,900	Risk Based Value



Groundwater Cleanup Levels for Petroleum-Related COCs



Analyte	Highest Detected Value	RGO	Rationale
Petroleum-Related VOCs (µg/L)			
1,2-Dibromoethane (EDB)	5	0.02	NC GWQS
1,2-Dichloroethane (DCA)	130	0.40	NC GWQS
Benzene	1,800	1	EPA MCL
Ethylbenzene	1,680	600	Risk Based Value
Methyl T-Butyl Ether (MTBE)	32	20	NC GWQS
Toluene	730	600	NC GWQS
Xylenes, total	910	500	NC GWQS
Petroleum-Related SVOCs (µg/L)			
1-Methylnaphthalene	21	1	NC GWQS
2-Methylnaphthalene	37	30	NC GWQS
Naphthalene	100	6	NC GWQS



Groundwater Cleanup Levels for Metals & Solvent-Related COCs



Analyte	Highest Detected Value	Cleanup Level	Basis for Level
Metals (µg/L)			
Manganese	13,000	880	Risk Based Value
Solvent-Related VOCs (µg/L)			
1,1,1-Trichloroethane (TCA)	1,200	200	EPA MCL
1,1,2-Trichloroethane (TCA)	0.65	0.60	NC GWQS
1,1-Dichloroethane (DCA)	37	6	NC GWQS
1,1-Dichloroethene (1,1-Dichloroethylene) (DCE)	2,100	7	EPA MCL
Solvent-Related SVOCs (µg/L)			
1,4-Dioxane	40	3	NC GWQS



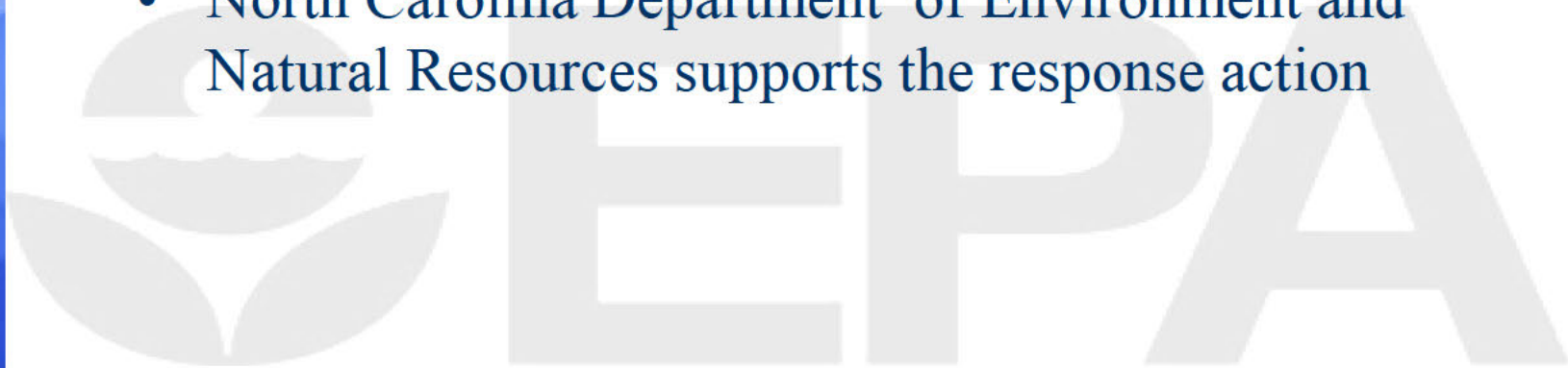
Enforcement History

- **Exemption 5 - AWP, AC**
- All EPA interim actions have been fund lead.
- Since 1987, NCDENR has been involved on this site.
 - Two USTs were removed in the late 1980's
 - Several regulatory actions (such as NOVs) were issued on the site
 - In December 2007, two whole-house carbon filtration units were installed and maintained by NC UST Program until public water was provided to the site area



State and Community Acceptance

- The community and local officials support site decisions made by EPA
- North Carolina Department of Environment and Natural Resources supports the response action





Schedule

- The RD will be conducted in phases
 - Phase 1: Source Control and 1,4-Dioxane treatment
 - Phase 2: Groundwater plume treatment
- Phase 1 RD will be complete by FY 2015.
 - State Superfund Contract will be signed by FY 2015 on Phase 1.
- Phase 2 RD will be complete by 2nd quarter FY 2016.